Case Study
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Fly Ash Sub-grade Stabilization and PPC Optimization

Fly Ash Sub-grade Stabilization and PPC Optimization
Washburn Municipal Airport

Introduction

The City of Washburn, North Dakota and Washburn Airport Authority desired a paved runway for local general aviation aircraft, as well as 500 to 600 operations (landings and takeoffs) per year by local power industry owned business aircraft. A paved runway is also expected to attract itinerant aircraft during the Lewis and Clark Bicentennial in years 2003 through 2006.

Design and construction, including fly ash sub-grade stabilization, a drainage/bond-breaking interlayer, and optimized Portland-pozzolan concrete (PPC) pavement, employing two locally available sources of fly ash, each suitable for it's particular purpose, is addressed.

Scope

Materials investigations, trial mix designs, agency review hurdles, construction adjustments, and the importance of communication and persistence are detailed and discussed.

Challenges

Trial mixes and materials testing were performed well in advance of final design and construction to allow presentation of findings and discussion with various entities toward timely submittal and refinement of design approaches.

Conclusions

General aviation airport owners, managers, their engineers, and contractors can all learn from the experience gained by this project. Emphasis is on addressing the pavement section's "total system performance" in response to environmental stresses. Sub-surface drainage, freeze-thaw resistance, avoidance of early pavement distress, and long-term strength considerations are addressed. Practical and inexpensive design solutions, construction materials, and methods are presented.

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